

3. Teleuto- and uredospores of *Phr. Luceianum*, $\times 220$ and $\times 350$.
4. Teleutospore of *Xenodochus Clarkianum*, $\times 350$.
5. Aecidiospore of the same $\times 350$.
6. Peridial cells of *Aecidium orbiculare*, $\times 350$.
7. Peridial cells and aecidiospores of *Aec. Cunninghamianum*, *a* $\times 350$,
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9. Teleuto- and uredospores of *Pucc. Ellisii*, $\times 350$.
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Plate V.

11. Teleuto- and aecidiospores and promycelium of *Phr. quinqueloculare*,
 $\times 350$.
12. Teleutospores of *Pucc. excelsa*, $\times 350$.
13. Teleutospores of *Pucc. occulta*, $\times 350$.
- *14. Teleutospores of *Pucc. McIntirianus*, $\times 350$.
15. Uredospores and paraphyses of *Melampsora ciliata*, $\times 350$.
16. Teleutospores of *Pucc. crassa*, $\times 350$.
17. Teleutospores of *Pucc. caudata*, $\times 350$.
18. Teleutospores of *Pucc. Castagnei*, $\times 350$.
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[Received 1st August, 1891; read 5th August, 1891.]

(With Plate VI.)

The following notes were drawn up while critically examining and rearranging the collection of Snakes in the Indian Museum; the collection is a fairly large one though there are many Indian species still unrepresented, and I should be very glad if any one would assist me to fill up the gaps especially in the Southern Indian and Ceylonese forms in which the Museum is specially deficient.

The number of Snakes described by Mr. Boulenger in his work on the Reptiles of the Indian Empire and Ceylon amounts in all to 264, of this number the Indian Museum possesses examples of 196, so that no less than 68 are still wanting to complete the Indian Museum Collection; of the 68 deficiencies, however, 22 at least of the species have only been got once and are represented in the British Museum or elsewhere usually by a single specimen.

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To the 264 snakes given in Mr. Boulenger's work I have now eleven to add, of which five are new, and described here for the first time and six are exotic species now recorded from the Indian Empire for the first time, so that the total number of Indian Snakes is now raised to 275.

The Indian Museum possesses a fair number of types, but unfortunately several which I believe should be here are no longer to be found in the collection, such is the case with *Typhlops andamanensis*, Stoliczka, *Calamaria catenata*, Blyth, and several others.

The following is a list of the species, twenty-one in number, of which the types are still in the Museum.

<i>Typhlops theobaldianus</i> , Stol.	<i>Coluber prasinus</i> , Bly.
<i>Trachischium fuscum</i> , (Bly.)	<i>Pseudoxenodon macrops</i> , (Bly.)
„ <i>tenuiceps</i> , (Bly.)	<i>Tropidonotus platyceps</i> , Bly.
<i>Blythia reticulata</i> , (Bly.)	„ <i>nigroinctus</i> , Bly.
<i>Lycodon gammiei</i> , (Blanf.)	<i>Dipsas multifasciatus</i> , Bly.
<i>Hydrophobus davisoni</i> , (Blanf.)	<i>Hypsirhina blanfordi</i> , Boul.*
<i>Pseudocyclophis bicolor</i> , (Bly.)	<i>Distira tuberculata</i> , (Anders.)
<i>Ablabes scriptus</i> , Theob.	<i>Amblycephalus modestus</i> , (Theob.)
„ <i>nicobarensis</i> , Stol.	„ <i>macularius</i> , (Bly.)
<i>Zamenis ladaccensis</i> , Anders.	<i>Trimeresurus cantoris</i> , Bly.
<i>Zaocys nigromarginatus</i> , (Bly.)	

To these must be added the types of the five new species described below.

<i>Ablabes stoliczkae</i> .	<i>Tropidonotus pealii</i> .
<i>Simotes woodmasoni</i> .	<i>Tropidonotus nicobaricus</i> .
<i>Zaocys tenasserimensis</i> .	

There are also in the Indian Museum the types of the following species found on the borders of the Indian Empire but not yet recorded from within its limits.

<i>Typhlops persicus</i> , Blanf.	<i>Pseudocyclophis persicus</i> , (Anders.)
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The total number of types therefore in the Indian Museum is thirty.

It is only due to Mr. Boulenger to add that it is entirely owing to his useful and excellent manual on Indian Reptiles in the Indian Fauna series that I have been able to work out and rearrange the Snakes in the Indian Museum, so much has been done since Günther's Reptiles of British India appeared and that scattered over so many various separate works and periodicals.

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I have found it difficult to separate these two species, in fact the only distinction pointed out by Boulenger is the presence of the pits below the nostrils, these I have found vary considerably in depth and conspicuousness; all the specimens of *T. bothriorhynchus* in the Indian Museum were procured in Assam where *T. diardi* also seems to be most abundant; it would therefore seem possible that this pit might be a sexual or seasonal mark, and that these two species are really one and the same.

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Of this species, which seems to be unrepresented in the British Museum Collection, the Indian Museum possesses two examples, one the type, the history of which is unknown, and a second procured by Capt. J. Butler at Samagooting in the Naga hills.

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This species is not confined to Southern India, it extends to Bengal, and the Indian Museum contains specimens from Sipri in Gwalior, Chybassa in Chota Nagpur, Calcutta and Krishnaghur.

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Boulenger does not mention whether the present species extends to China, Günther also expresses a doubt on the subject, the matter may now be settled as the Indian Museum possesses an undoubted specimen of *P. molurus* procured by Surgeon-Major Hungerford at Haiphong (Hiaofung?) near Shanghai.

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CALAMARIA SUMATRANA, Edeling, *Natuur. Tijdsch. Ned. Indië* xxxi, p. 379, (1870).

A specimen of this apparently rather rare snake from Singapore presented to the Museum by Mr. Davison, was kindly identified for me by Mr. Boulenger; it has hitherto been known from Sumatra only.

TRACHISCHIUM GUENTHERI, Boulenger, p. 285.

There are three snakes in the Indian Museum which seem referable to this species, one from Katmandu in Nepal and two labeled "Allahabad J. Cockburn," the latter probably came from Naini Tal as there are other Himalayan snakes in the collection presented by Mr. Cockburn labelled Allahabad; it is probable therefore that this is the more western representative of *Trachischium fuscum* from which it differs merely in colouration and the number of ventral shields.

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There are no specimens of *L. striatus* in the Museum from Southern India, the localities from which there are specimens are the hills below Simla, Jemper in Sind, Lahore, Agra, Ajmere, Rajputana, and the Ganjam district; the species is recorded from the Anamalai hills by Günther, but this was before *Lycodon travancoricus* which resembles *Lycodon striatus* very strongly had been discriminated; of this species (*S. travancoricus*), the Museum possesses examples from the Nilgiri hills, the South Arcot district and Tinnevely hills, it therefore appears probable that it entirely replaces *S. striatus* in the southern part of the Indian Peninsula.

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The Indian Museum possesses two specimens of this rather rare species, one from Shillong in the Khasia hills collected by the late Major Cock, and one from Tezpur obtained by Col. Godwin-Austen; the species has been hitherto recorded only from the Kakhien hills and Western Yunnan.

POLYDONTOPHIS BISTRIGATUS, (Günth.), Boulenger, p. 304.

The geographical area of this species can be extended to the Nicobars whence there is an example procured by Mr. de Roepstorff.

ABLABES STOLICZKAE, sp. nov. Pl. VI, fig. 1.

Rostral shield broader than deep, the part visible from above about two-thirds the length of the internasals; internasals shorter than the prefrontals and somewhat triangular, frontal hardly as long as its distance from the end of the snout, and a good deal shorter than the parietals; nostrils rounded, about the middle of the length of an undivided shield which is quite three times as large as the loreal; this latter is very small and squarish; one preocular not reaching the upper part of the head, two postocular both in contact with the parietals; eye of moderate size, about half the length of the snout; temporals 1 + 2; upper labials eight, fourth and fifth entering the eye; four lower labials in contact with the anterior chin shields which are about as long as the posterior. Scales smooth, in fifteen rows. Ventrals 153-4, subcaudals 116-9. Anal divided. Colour light olive-brown above, lighter olive yellow below, the two colours separated in front by a conspicuous broad longitudinal black streak, extending from just in front of the eye back along the neck for an inch or so.

There are two specimens of this species in the Museum. One procured at Samagooting in the Naga hills of Assam by Capt. J Butler, the other to which no locality is attached but which was received from Dr. F. Stoliczka of the Geological Survey.

This species differs from all the Indian species of *Ablabes* described by Boulenger, except *Ablabes calamaria*, in having a single nasal shield; in all the other species of the genus the nasal shield is divided or semi-divided.

From *A. calamaria* to which it is most nearly allied, it differs in having a loreal distinct from the nasal shield, in having both postoculars in contact with the parietal and in the much larger number of subcaudals, 116-9 against 64-76 in *A. calamaria*.

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The Indian Museum is indebted to Mr. R. D. Oldham of the Geological Survey for a specimen of this rather rare snake which he procured in Manipur.

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Two snakes collected by Dr. Anderson in Palestine near Lake Galilee seem referable to this species; they agree very well with the description given by Blanford (*l. c.*) of a Persian specimen in the Genoa Museum except that in the Palestine specimens, the posterior chin shields are slightly smaller than the anterior ones, whereas in the Persian specimens the chin shields are said to be equal in size; the allied species *Ablabes modestus* has been recorded from Palestine, but not so far as I am aware the present one.

SIMOTES CYCLURUS, (Cantor), Boulenger, p. 311.

The type specimens of *Simotes obscurus* and *Simotes crassus* are undoubtedly both faded specimens of this species, as was surmised by Boulenger (*l. c.*); with regard to some of the specimens in the Museum, it is very difficult to say, whether they should be referred to this species or *S. albocinctus*, since the number of anterior temporals and labials entering the eye seem to vary somewhat, so that some of the examples are coloured like one species, but scaled like the other; possibly this may be due to hybridism.

Judging from the specimens of these two snakes in the Indian Museum, it would appear that *S. cyclurus* was an inhabitant of higher lands than *S. albocinctus*.

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This species with which according to Boulenger (*l. c.*) *Simotes trinotatus*, Dum. et Bibr., *S. labuanensis*, Günth., *S. catenifer*, Stol. and *S. dennysi*, Blanf., are conspecific, may now be included among the snakes of the Indian Empire, since a specimen was procured by Dr. Anderson from Tavoy in Tenasserim and is now in the Museum.

SIMOTES WOOD-MASONI, sp. nov. (Plate VI, fig. 2.)

Nasal divided; portion of the rostral seen from above a little shorter than its distance from the frontal; suture between the internasals shorter than that between the prefrontals; frontal longer than its distance from the end of the snout, as long as the parietals; loreal small, longer than deep; one preocular, one subocular separating the third labial from the

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eye margin, two postoculars; temporals 1 + 2; six upper labials, the fourth alone entering the eye, the fifth the largest; four lower labials in contact with the anterior chin shields; posterior chin shields small, less than half the size of the anterior. Scales in 17 rows. Ventrals strongly angulate, 180-6. Anal undivided. Subcaudals 57.

Colour; adult, above brick reddish with traces of a dorsal and three lateral narrow lighter longitudinal lines; below dusky reddish with a light longitudinal line on either side at the angle of the ventrals; head with a dark median longitudinal mark extending back from the anterior end of the frontal to the nape where it bifurcates into the ground colour of the back, an oblique dark streak across the anterior nasal and the three anterior labials; a second oblique streak from the 4th and 5th labials through the eye above which it bifurcates and meets its fellow from the opposite side, a third oblique streak across the parietals and the sides of the neck. In the young the markings are much more conspicuous, the lighter colour being yellow and contrasting strongly with the darker brown of the markings.

This species is most nearly allied to *Simotes violaceus* and *S. octolineatus*; from the former species it differs in the reduced number of its labials, of which only the fourth enters the eye, and also in colouration.

From *S. octolineatus* it differs in having a subocular which excludes the third labial from the eye and in possessing only a single anterior temporal; in colouration, however, especially of the young, the two species much resemble one another.

There are two examples of this species in the Indian Museum, from which this description was drawn up, one from the Andamans collected and presented by Mr. Wood-Mason, and one from the Nicobars where it was procured by the late Mr. F. A. de Roepstorff.

SIMOTES THEOBALDI, Günth., Boulenger, p. 318.

The Indian Museum contains four examples of this rather uncommon species, from Mandalay (Anderson), from Meiktalla (Collett), and from Mergui.

SIMOTES PLANICEPS, Boulenger, p. 316.

An example of this snake was procured by Dr. Anderson during one of his two expeditions to Yunnan and Upper Burma, which had apparently never been named or described; unfortunately the specimen is without locality, though it no doubt comes from Upper Burma; the species has hitherto been known from a single specimen only, procured by Fea at Minhla in Burma.

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OLIGODON DORSALIS, (Gray), Boulenger, p. 318.

The range of this species may be extended from the Khasia hills south to the Naga and Chittagong hills whence the Indian Museum possesses examples procured by Capt. J. Butler and Mr. Bruce respectively.

OLIGODON SUBLINEATUS, Dum. & Bibr., Boulenger, p. 320.

Two examples of this species indistinguishable from the typical Ceylon specimens were got by Mr. de Roepstorff in the Nicobars and are now in the Museum.

OLIGODON SUBGRISEUS, Dum. & Bibr., Boulenger, p. 321.

This typically Indian species has spread over the natural boundaries of India as far as Killa Abdulla near the Khojak Pass in British Baluchistan whence the Museum possesses a specimen presented by Mr. J. A. Murray.

OLIGODON MELANOCEPHALUS, (Günth.), Boulenger, p. 317.

Gunther (P. Z. S. 1864, p. 491) and Jan. (Icon. Ophid. livr. xiii, pl. iii, fig. 4, Oct. 1865), seem to have described and figured the same snake independently under the same specific name, the former making a new genus for its reception, the latter including it in the genus *Homolosoma*.

The examination of a specimen brought by Dr. Anderson from Sebastiyeh (Samaria) in Palestine confirms Boulenger in placing the species in the genus *Oligodon*.

RHAGERRHIS PRODUCTA, (Gerv.), Peters Monatsb. Akad. Berlin, 1862, p. 275; Murray, Ann. Mag. N. H. (5) xiv, p. 104.

This rather curious snake was described by Peters (*l. c.*) from Senaar in N. E. Africa, and has since been recorded by Murray from Tanjistan and Bushire in Persia; one of the Tanjistan specimens is now in the Indian Museum and agrees with Peters' description in every respect.

ZAMENIS KORROS, (Schleg.), Boulenger, p. 324.

There is an undoubted example of this species in the Indian Museum said to have been procured by Dr. E. F. Keleart in Ceylon; Anderson quoting from Ferguson's "Reptile Fauna of Ceylon" states that this species is not found in Ceylon; it is possible therefore that the specimen in question may be wrongly labelled though there does not seem to be any particular reason for this being the case.

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ZAMENIS VENTRIMACULATUS, (Gray), Boulenger, p. 325.

ZAMENIS LADACCENSIS, Anderson, Boulenger, p. 326.

There are no specimens of *Z. ventrimaculatus* in the Indian Museum from Persia or anywhere outside the Indian Empire. The Museum possesses examples from the following localities. Below Simla, Sabathu, Rajanpur in the Punjab, Jeypore Rjpt., and Karachi. Of *Z. ladaccensis* the Indian Museum possesses specimens from Shiraz (including the type of *Gonyosoma dorsalis*, Anders) Bushire, Karman and Regan in Persia; Askan, Zamran, Hung, and Quetta in Baluchistan; Gilgit and Ladak.

If this really represents the true distribution of the two species their geographical areas are quite separate and the two species may be considered quite distinct.

ZAMENIS DIADEMA, (Schleg.), Boulenger, p. 328.

The distributional area of this snake may be extended eastwards as far as Allahabad perhaps as far as Purneah, as there is a specimen probably from the latter place in the Indian Museum.

ZAOCCYS TENASSERIMENSIS, sp. nov. (Plate VI, fig. 3.)

Rostral as broad as deep, just visible from above; suture between the internasals two-thirds of that between the pre-frontals, frontal longer than its distance to the end of the snout, shorter than the parietals; three loreals, one larger anterior, and two smaller posterior; one long and narrow preocular reaching the top of the head but not touching the frontal; one subocular below it wedged in between the fourth and fifth labials; two postoculars; a single pair of long temporals on either side, the posterior temporals not larger than the ordinary scales; upper labials 7 to 8 in number, one very large labial alone entering the eye; in the specimen described this is on one side the fourth, on the other the fifth; five lower labials in contact with the anterior chin shields which are equal to the posterior; scales in sixteen rows all smooth, the two median dorsal rows and the two outer rows adjoining the ventrals on either side are more or less broad and quadrangular, whereas the five intermediate rows on either side are narrow and oblique. Ventrals not angulate, 201; Subcaudals 123; anal divided.

Colour, black above to greenish olive on the head, anteriorly traces of a white vertebral line, in the middle part of the body a series of ill defined white transverse bands bordered with black posteriorly, on the hinder part of the body, the bands are gradually transformed into seven longitudinal series of white spots separated by a black network, of the series of spots the outer series on either side are on the ventrals; below

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yellowish the outer edges of the ventrals dusky, tail with a median dusky streak.

This snake is quite different from the only other Indian species of the genus, *Z. nigromarginatus*; in fact it belongs to the other section of the genus characterized by Günther by the possession of three loreals and named by him *Zapyrus*.

It seems to most resemble *Zaocys fuscus* from Borneo, but differs from this snake in colouration and also in the number and position of upper labials.

COLUBER HELENA, Daud., Boulenger, p. 331.

The range of this snake extends somewhat beyond the limits imposed by Boulenger; the Indian Museum possesses examples from the Purneah district and Mutlah in Bengal and from Samagooting in Assam.

COLUBER RETICULARIS, Cantor, Boulenger, p. 332.

The range of this species too may be extended from Sikkim and Assam southwards to Arakan and Pegu whence the Museum possesses specimens.

COLUBER TAENIURUS, (Cope), Boulenger, p. 333.

Coluber nuthalli, Theobald (Cat. Rept. As. Soc. Mus., p. 51) the type of which is in the Indian Museum, is obviously a young specimen of *C. taeniurus* and is not identical with *Coluber helena*, as suggested by Boulenger.

COLUBER RADIATUS, Schleg., Boulenger, p. 333.

The Indian Museum possesses examples of this snake from Backergunge in Lower Bengal (E. Taylor) and from Hong Kong, from neither of which localities is this species recorded by Boulenger.

COLUBER PRASINUS, Bly., Boulenger, p. 334.

COLUBER OXYCEPHALUS, Boie, Boulenger, p. 335.

There are in the Museum examples of both these snakes from Darjeeling (Gammie) whence they are not recorded by Boulenger.

TROPIDONOTUS CHEYSARGUS, Schleg., Boulenger, p. 345.

TROPIDONOTUS NIGROCINCTUS, Bly., Boulenger, p. 346.

The distinction given by Boulenger in his key between these two species I find to be by no means a constant one; several of the specimens of *Trop. nigrocinctus* in the Museum possess two anterior temporals; the

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colouration, however, of the two species is very distinct, the three oblique black streaks, below the eye, behind the eye and on the neck at once distinguishing *Tropidonotus nigrocinctus* from its ally.

TROPIDONOTUS HIMALAYANUS, Günth., Boulenger, p. 347.

This species is much more distinct from *T. subminiatus* than would be gathered from a perusal of Boulenger's description; *T. himalayanus* is much darker and very nearly always retains traces of the dorso-lateral series of white and black spots which are always found in the young, whereas in *T. subminiatus* the ground colour above is much lighter, almost blue, and very seldom retains any traces of the spots; in *T. himalayanus* the labials are all light coloured, edged with black and the oblique dark streak, under the eye so conspicuous a feature in *T. subminiatus* is altogether absent; the ventral surface in *T. himalayanus* is very dark, in some specimens almost black, whereas in *T. subminiatus* it is never dusky.

In none of the large number of specimens of *T. subminiatus* which I have examined, is there any trace of the keels on the outer row of scales, in *T. himalayanus*, however, the outer row of scales is as often keeled as not, and sometimes almost as strongly as in *T. chrysargus* and *T. nigrocinctus*.

The Indian Museum possesses examples of *T. subminiatus* from Sikhim, the Garo, Khasia and Naga hills, Manipur, Yunnan, Burma and from throughout Tenasserim; of *T. himalayanus* from Darjeeling (3000 to 4000 feet), the hills of Assam and Moulmein in Burma.

TROPIDONOTUS PLUMBICOLOR, Cantor, Boulenger, p. 351.

As is so often the case with Southern Indian forms, this species extends its range northwards to Mt. Aboo in Rajpootana; the Indian Museum also possesses examples from Nowgong and the Upper Godavery district in the Central Provinces, from the Nilgiri, Anamalai and Tinnevely hills in S. India and from Galle in Ceylon.

TROPIDONOTUS ANGUSTICEPS, Blyth, J. A. S. B. xxiii, p. 295; Boulenger, p. 352.

Three bottles containing four snakes were found amongst the collection of the Indian Museum labelled *Tropidonotus angusticeps*, of these snakes one was obviously *T. piscator* and does not seem to have been one of Blyth's original specimens; of the others, two with no history attached are without doubt examples of *Tropidonotus hydrus*, and the fourth, which was said to be the actual type of *T. angusticeps* collected by Capt. Abbott

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in Ramri Island on the Arakan coast is a very faded specimen of *Pseudoxenodon macrops*.

The description of *T. angusticeps* seems to refer to both the latter species, *T. hydrus* and to *Pseudoxenodon macrops*.

TROPIDONOTUS PEALII, sp. nov. (Plate VI, fig. 4.)

Eye moderate, its diameter hardly equal to its distance from the nostril; rostral just visible from above; internasals broadly truncated anteriorly, suture between them shorter than that between the prefrontals; frontal longer than its distance to the end of the snout, shorter than the parietals; loreal nearly square; 1-2 preoculars; 2-3 postoculars; temporals 2 + 2; upper labials nine, fourth and fifth entering the eye; five pairs of lower labials in contact with the anterior chin shields, which are shorter than the posterior. Scales in 19 rows, strongly keeled, outer row also keeled but not so strongly as the rest; ventrals 142-144, subcaudals 75-77, anal entire.

Colour in spirit dark brown above, with a narrow light longitudinal line on either side, edged rather darker reaching the length of the body, below on either side occupying the lateral scales bordering the ventrals another light and much broader band two scales wide; head dark brown above, the upper and lower labials and rostral yellow, edged and blotched with brown, ventrals very dark brown each tipped laterally with light yellow, the longitudinal band so formed enlarges anteriorly to form a large white mark under the posterior lower labials; an indistinct yellow line along the middle of the ventral shields rather more conspicuous posteriorly.

Total length, 20 in.; tail 5 in.

This species is a very well marked one in every way; it differs from all the other Indian species (except *T. plumbicolor*?) in having an undivided anal shield; apart from this it is perhaps somewhat allied to *Tropidonotus parallelus* with which it agrees in having a small eye and the outer row of scales keeled.

There are in the Indian Museum two examples of this snake, both collected in the Sibsagar district of Assam by Mr. S. E. Peal, who has contributed very largely to our collection of snakes and after whom I have much pleasure in naming this fine new species.

TROPIDONOTUS NICOBARENSIS, sp. nov. (Plate VI, fig. 5.)

Eye large, its diameter exceeding its distance from the nostril; nostril just visible from above; internasals truncated, suture between them and between the prefrontals about equal in length; frontal longer than its distance to the end of the snout, very nearly as long as the parietals;

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loreal squarish; one large preocular reaching the top of the head, but not touching the vertical; three postoculars; temporals 1 + 2, the posterior pair very much smaller than the anterior and hardly larger than the scales around; upper labials 7 or 8, the third and fourth, or fourth and fifth entering the eye; five pairs of lower labials in contact with the anterior chin shields which are much shorter than the posterior ones. Scales in 19 rows strongly keeled including the outer row; ventrals 162; subcaudals 119; anal divided.

Colour, above bluish olive with a longitudinal dorsal band from the nape to the tail about two scales wide bordered on either side by a narrow black line, another indistinct white line laterally on either side, head uniform, a black streak behind the eye; below lighter than above, uniform; chin, upper labials and snout yellowish without the bluish tinge.

The only example of this new species is one from Camorta in the Nicobars, procured there by Mr. de Roepstorff.

I have referred this snake to *Tropidonotus*, but I am by no means certain that it is properly there located; the only example in the Museum is a small and obviously young one, and I cannot make out that there is very much difference in the size of the maxillary teeth, and the number of subcaudals is very high for this genus; the only species which it seems to resemble at all is *Prymniodon chalcus*, Cope (Günther, Reptiles Brit. Ind. p. 274) which is said to have come from Siam; with the description of this species in Günther, it agrees admirably except in the two important characters of the dentition and the anal shield.

The maxillary teeth of *Prymniodon* are said to be very considerably larger anteriorly than posteriorly, and the anal shield is entire; in the species before me the maxillary teeth appear to be of equal length throughout, and the anal is divided; it is therefore impossible to identify the Nicobar species with *Prymniodon* and I have thought it best, until more specimens are forthcoming to leave it in the genus *Tropidonotus*.

TROPIDONOTUS RHODOMELAS, Boie, Blanford, P. Z. S. 1881, p. 221.

Tropidonotus mortoni, Theobald, (Cat. Rept. As. Soc. Mus. p. 57) is referable to this species of which we have examples from Singapore and Sinkip Island, Sumatra.

TROPIDONOTUS TRIANGULIGERUS, Schleg., Anderson, Journ. Lin. Soc. xxi, p. 345.

This snake was obtained by Dr. Anderson in Mergui and the Museum also contains examples from North Tenasserim, the Malay Peninsula and from Sinkip Island, Sumatra; it is not mentioned by Boulenger, and must be added to the Indian Fauna.

loreal squarish; one large preocular reaching the top of the head, but not touching the vertical; three postoculars; temporals 1 + 2, the posterior pair very much smaller than the anterior and hardly larger than the scales around; upper labials 7 or 8, the third and fourth, or fourth and fifth entering the eye; five pairs of lower labials in contact with the anterior chin shields which are much shorter than the posterior ones. Scales in 19 rows strongly keeled including the outer row; ventrals 162; subcaudals 119; anal divided.

Colour, above bluish olive with a longitudinal dorsal band from the nape to the tail about two scales wide bordered on either side by a narrow black line, another indistinct white line laterally on either side, head uniform, a black streak behind the eye; below lighter than above, uniform; chin, upper labials and snout yellowish without the bluish tinge.

The only example of this new species is one from Camorta in the Nicobars, procured there by Mr. de Roepstorff.

I have referred this snake to *Tropidonotus*, but I am by no means certain that it is properly there located; the only example in the Museum is a small and obviously young one, and I cannot make out that there is very much difference in the size of the maxillary teeth, and the number of subcaudals is very high for this genus; the only species which it seems to resemble at all is *Prymniodon chaldeus*, Cope (Günther, Reptiles Brit. Ind. p. 274) which is said to have come from Siam; with the description of this species in Günther, it agrees admirably except in the two important characters of the dentition and the anal shield.

The maxillary teeth of *Prymniodon* are said to be very considerably larger anteriorly than posteriorly, and the anal shield is entire; in the species before me the maxillary teeth appear to be of equal length throughout, and the anal is divided; it is therefore impossible to identify the Nicobar species with *Prymniodon* and I have thought it best, until more specimens are forthcoming to leave it in the genus *Tropidonotus*.

TROPIDONOTUS RHODOMELAS, Boie, Blanford, P. Z. S. 1881, p. 221.

Tropidonotus mortoni, Theobald, (Cat. Rept. As. Soc. Mus. p. 57) is referable to this species of which we have examples from Singapore and Sinkip Island, Sumatra.

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DIPSAS MULTIFASCIATA, Blyth, J. A. S. B. xxix, p. 114.

This species, the type of which was described by Blyth, from Subathu near Simla in the North-West Himalayas, was afterwards identified by Stoliczka (J. A. S. B. xxxix, p. 199) with *D. ceylonensis* a species which is otherwise apparently confined to Southern India and Ceylon.

I cannot agree with Stoliczka with regard to this identification, in the first place the preocular shield which extends nearly to the vertical in the case of *D. ceylonensis*, does not or barely reaches the top of the head in *D. multifasciata*; again in none of the specimens of *D. ceylonensis* which I have been able to examine is there the slightest trace of the narrowing of the preocular shield below, so that the lower corner of the loreal enters the eye, this arrangement is found more or less markedly in all the specimens of *D. multifasciata*; finally the colouration of the two species is very different, though perhaps difficult to describe.

The following shows at a glance the difference between the two species, the characters being taken from an examination of the specimens in the Museum:—

Dipsas multifasciata.

Loreal entering the eye below the preocular except in two cases where the lower corner of the loreal is prolonged in that direction, but does not quite reach it.

Preocular barely reaching the top of the head in some cases.

Temporals 1+2 or 2+1.

Scales in 21 rows.

Ventrals 231-248. Subcaudals 96-109.

Head with a well marked lateral black band from the prefrontals to the end of the parietals.

A median black streak on the nape.

The labials edged with black.

A well marked streak from the eye to the gape.

Ventrals marked with lateral square blotches throughout.

Dipsas ceylonensis.

No approach of the loreal to the eye, preocular of equal width throughout.

Preocular reaching the top of the head and sometimes touching the vertical.

Temporals 2+3.

Scales in 19 rows.

Ventrals 221-3. Subcaudals 90.

All the upper head shields black blotched, no definite longitudinal band.

Three ill-defined longitudinal black bands on the nape generally joined by a transverse band behind and forming a trident.

Labials not edged with black.

Streak from eye to gape ill-defined and interrupted.

Ventrals irregularly and very lightly spotted.

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Of *Dipsas ceylonensis*, the Indian Museum possesses examples from the Anamalai hills only; of *D. multifasciata* besides the type from Subathu near Simla examples from Mussooree, Naini Tal and Darjeeling.

DIPSAS CYANEA, (Dum. & Bibr.), Boulenger, p. 361.

This species occurs in Tenasserim; there is an example in the Indian Museum from Tavoy.

DIPSAS CYNODON, Cuv., Günther Reptiles Brit. Ind., p. 368.

This species must be added to the fauna of the Indian Empire; there are in the Indian Museum undoubted examples from the Garo hills (Capt. Williamson), Samagooting (Capt. Butler) and Cachar (Museum Collector) in Assam; and from Thyetmyo (W. T. Blanford) the Burma-Siam hills (Museum Collector), and Mergui (W. Theobald) in Burma; this species is recorded from two of the above localities by Theobald in his Catalogue of the Snakes of the Asiatic Society, and it seems curious that this should have been overlooked by Boulenger.

DRYOPHIS FRONTICINCTUS, Günth., Boulenger, p. 368.

There is a snake in the Indian Museum from Sibsagar in Assam presented by Mr. S. E. Peal which I am unable to identify with any other species; if this is the case it cannot be that this snake is confined to the neighbourhood of brackish water as is suggested by Stoliczka.

DRYOPHIS MYCTERIZANS, (Daud.), Boulenger, p. 370.

This snake like many other Southern Indian species extends north-westwards as far as Mt. Aboo in Rajputana.

DRYOPHIS PULVERULENTUS, (Dum. & Bibr.), Boulenger, p. 371.

This species is apparently generally distributed throughout Peninsular India, there are six undoubted examples in the Indian Museum collected by Mr. V. Ball in Maunbhoom.

CERBERUS RHYNCHOPS, (Schneid.), Boulenger, p. 374.

This species appears to be common on the Andamans and Nicobars.

HYSIRHINA BLANFORDII, Boulenger, p. 377.

This species is founded on a single specimen described by Blanford as probably from the neighbourhood of Bassein; this unique specimen does not seem to be in the British Museum as Mr. Boulenger distinctly says that he has not been able to examine it; there is, however, an ex-

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ample of this species in the Museum with no recorded history, which had been identified by Dr. Anderson as *Gerarda bicolor*, and it is possible that this is the missing type which has lost its label.

HYPsirhina sieboldii, (Schleg.), Boulenger, p. 377.

This species occurs in Assam; the Indian Museum contains a specimen from Samagooting in the Naga hills.

FORDONIA leucobalia, (Schleg.), Boulenger, p. 378.

This species occurs in the Sunderbunds, there is an example thence in the Museum, presented by the Rev. H. J. Harrison.

CALLOPHIS nigrescens, Günth., Boulenger, p. 384.

This species varies considerably in colour, of the specimens in the Indian Museum, there is one referable to the spotted variety (var. A. of Boulenger) from the Wynaad; three of the variety with three longitudinal white-edged bands (var. B. of Boulenger) from Malabar, the Anamalai and the Shevaroy hills; and finally two of the variety with five longitudinal bands from Malabar and Ganjam.

MEGAEROPHIS flaviceps, Reinh., Günther Rept. Brit. Ind. p. 346.

This species, which is not mentioned by Boulenger, should be included among the Snakes of the Indian Empire; there is an example of it in the Museum from Mergui in Tenasserim, presented by Mr. W. Theobald.

BURGARUS caeruleus, (Schneid.), Boulenger, p. 388.

This snake, which is found all over India proper, appears to be very rare on the eastern side of the Bay of Bengal, in fact the Indian Museum possesses what I believe to be the only specimen recorded thence, one procured by Col. Nuthall from Rangoon, and this might have easily reached Burma by ship. Lately, however, the Museum has received a pair of "Kraits" from Meiktalla in Upper Burma where they were found by General H. Collett which differ in some respects from the ordinary Indian form of this snake, although hardly perhaps enough to merit specific distinction.

The following are the points in which this variety differs from the typical Indian form.

The rostral is deeper than broad and extends back to about two-thirds or three-fourths of its distance from the frontal; the ventral shields number 223 and 228 respectively and the subcaudals 49.

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The colour above is a dark slaty blue, the dorsal scales are alternately yellow and slate coloured, the yellow extending for about 10 or 12 scales and reappearing again after a somewhat longer interval; the scales on the sides of the yellow dorsal scales also exhibit conspicuous pale edgings so that the whole snake has the appearance of about 12 light coloured bands encircling the body.

BUNGARUS BUNGAROIDES, (Cantor), Boulenger, p. 389.

An example of this snake from Darjeeling presented by Mr. J. Gammie has a well marked loreal shield present on either side of the head.

BUNGARUS LIVIDUS, Cantor, Boulenger, p. 389.

The range of this species extends as far as Lower Bengal as is shown by an example procured at Saidpur in the Dinajpur district presented by Mr. W. de W. Peal.

The vertical scales of this snake are said by Mr. Boulenger to be "but feebly enlarged and not broader than long," in two, however, out of the three examples of this species in the Museum, the vertebral scales are certainly broader than long in the posterior part of the body.

NAIA TRIPUDIANS, Merr., Boulenger, p. 391.

There are in the Indian Museum a very large number of Cobras from different parts of India, and it seemed worth while to try and make out how far the various colour varieties of the Cobra were constant to fixed geographical areas.

The specimens in the Museum are all spirit-preserved ones and not very large, and although a great deal more has still to be done before an accurate knowledge of the geographical distribution of the varieties can be made out, the following seems to roughly indicate the truth.

a. Hood with the well known spectacle-marking on it; above and below, stone coloured, with the characteristic dark pectoral band across the chest.

In the Indian Museum examples from Banda, N.-W. P., Ganjam district, Calcutta, and the Krishnagar district.

This is "var. *a*" of Günther's Reptiles and the "Gokurrah" of Fayer, and is probably found throughout the peninsula of India.

b. Hood with a white circular marking, edged with black, behind the hood-marking is a dark, followed by a light ring encircling the body, rest of the body dark, mottled lighter.

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pears to be the commonest variety, this is the "Keautiah" of Fayer and "var. θ " of Günther who also records it from Assam and Sikkim.

c. Hood as above with the circular marking; uniform brown above, below, anteriorly light coloured, posteriorly darker.

In the Indian Museum examples from Assansole, Bengal, Calcutta, Sibsagar and Samagooting, Assam, Chittagong and the Andamans.

This is the variety most commonly met with, I believe, throughout Burma, it appears to correspond to "var. ζ " of Günther which he records from Siam.

d. Hood with no marking, light coloured above and below with darker pectoral bands.

The Indian Museum contains examples of this species from the Rungpur district in Bengal, from Assam, the Chittagong hills, Mandalay and Mergui.

e. Hood with no marking, blue black above and below except slight traces of lighter colour on each side of the throat.

The Indian Museum contains examples of this well-marked variety from the Andamans (?) and Singapore, where it appears to be very abundant.

It seems to correspond to part of "var. ϵ " of Günther.

f. No marking on the hood; very dark brown, almost black above and below.

The Indian Museum contains examples of this variety from the Punjab and Rajputana, and this is probably the same as part of Günther's "var. ϵ " which came from the Deccan.

g. No marking on the head, colour a light sandy with bluish tinge; two dark bands on the neck extending all round, behind these two anterior bands a series of chevron-shaped forwardly directed bands, which become fainter towards the tail.

There are examples of this curiously coloured variety in the Indian Museum from Khojak in British Baluchistan and from the Punjab.

This variety was first described by Eichwald as *Tomyris oxiana* and has been shown by Boulenger and Boettger to be conspecific with the typical *N. tripudians*.

DISTIRA CYANOCINCTA, (Daud.), Boulenger, p. 410.

The types of *Hydrophis trachyceps*, Theobald, (Cat. Rept. As. Soc. Mus. p. 70) and *Hydrophis crassicollis*, (Anderson, J. A. S. B. xl, p. 19) may both be referred to this species, the former was got at Mergui, the latter in the Hooghly below Calcutta.

AMBLYCEPHALUS MONTICOLA, (Cantor), Boulenger, p. 415.

There is a snake in the Indian Museum from Camorta in the Nico-

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bars presented by Mr. F. A. de Roepstorff which seems quite identical with undoubted examples of *A. monticola* from Assam.

AMBLYCEPHALUS MACULARIUS, (Blyth ?), Boulenger, p. 416.

AMBLYCEPHALUS CARINATUS, (Reinw.), Günther, Reptiles Brit. Ind., p. 326.

A good deal of confusion in the synonymy of these snakes has been caused by Mr. Theobald, who when examining and cataloguing the Asiatic Society's collection of Snakes identified as the adult and young of the same species certain snakes which had been referred by Blyth to two different species, *i. e.*, *Aplopeltura boa*, Schleg. (Theobald's adult) and *Pareas macularius*, Blyth (Theobald's young).

I have been quite unable to find any published description by Blyth of the latter species and so I must conclude that *Pareas macularius* is a manuscript name.

These snakes which were five in number Theobald first of all (J. Linn. Soc. x, p. 54), referred to *Pareas macularius*, the manuscript name given by Blyth to the three smaller specimens only; afterward (Cat. Rept. Mus. As. Soc., p. 63) he gave a new name, *Pareas berdmorei*, to these same five snakes, and finally (Cat. Rept. Brit. Ind., p. 203) he identified them with *Pareas margaritophorus*, Jan.

On examining the five snakes in question, it was at once evident that the two larger examples were quite distinct from the three smaller ones in colour and disposition of the head-shields and in fact in every way.

The larger snakes have internasals nearly as large as the prefrontals which latter shields are excluded from the eye, and in every other respect resemble *A. carinatus*; while the smaller snakes in which the prefrontal enters the eye, agree with the description of *A. macularius* as given in Boulenger's Reptiles.

Pareas berdmorei is therefore only in part a synonym of *Amblycephalus macularius* as described by Boulenger, and also in part a synonym of *Amblycephalus carinatus*.

There are in the Indian Museum only the three original specimens of *A. macularius*, which were procured by Major Berdmore at Martaban in Burma; of the other species, *A. carinatus*, which is an addition to the Fauna of the Indian Empire, besides the two specimens procured by Major Berdmore in Tenasserim, there are two from Tavoy (Museum Collector), one from the Burma-Siam hills and one from Mergui (Anderson).

TRIMERESURUS GRAMINEUS, (Shaw), Boulenger, p. 429.

TRIMERESURUS PURPUREOMACULATUS, (Gray), Boulenger, p. 429.

Of these two species there is a very large series in the Museum; and if the insular and Malayan forms be excluded, the two species are fairly

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TRIMERESURUS GRAMINEUS, (Shaw), Boulenger, p. 429.

TRIMERESURUS PURPUREOMACULATUS, (Gray), Boulenger, p. 429.

Of these two species there is a very large series in the Museum; and if the insular and Malayan forms be excluded, the two species are fairly

constant in scaling and colour. The points of distinction between the two species are as follows :

In *T. purpureomaculatus* the head scales are juxtaposed and convex or keeled, the temporal scales are strongly keeled, the scales are in 25-27 rows and the colour is in spirit a porphyraceous blue; in *T. gramineus* the head scales are small, smooth, and imbricate, the temporal scales are also smooth, the scales are in 19 to 23 rows and the colour is a uniform green.

It is in most cases perfectly easy to distinguish these two snakes, but there are in the Indian Museum some specimens which are intermediate in character, whether they are hybrids or not it is difficult to say, but as the two snakes inhabit approximately the same geographical area, it is quite possible that this may be the case.

Among the intermediate forms may be mentioned nine snakes from Sibsagar in Assam (register no. 4015-23) which have the juxtaposed convex head shields of *T. purpureomaculatus*, but the smooth temporals and 21 rows of scales of *T. gramineus*; again a snake (register no. 4109) from Moulmein has the convex head shields and keeled temporals but only twenty-one rows of scales.

Of *T. purpureomaculatus* the Museum contains examples from Lower Bengal, and from various localities in Assam and Burma; and of *T. gramineus*, examples from Simla, Sikhim, Assam, Burma and Hongkong.

In the Islands of the Bay of Bengal, Preparis Isle, Cocos Isles, the Andamans and Nicobars there are several different coloured varieties of Pit vipers which, in my opinion with one exception only, are better referred to *Tr. gramineus* than to *Tr. purpureomaculatus*; besides these varieties there is a closely allied form, which is recognised by Boulenger as a separate and distinct species; this is *Tr. cantoris* of Blyth, of which the Museum possesses a fair series, all from the Nicobars with one exception, which is from the Andamans.

The following is a list with brief descriptions of the various varieties above mentioned.

a. Preparis Island variety.

Light brown above with darker dorsal and lateral spots; ventrals light coloured, marbled with brown, scales in 25 rows; this form has the characteristic juxtaposed convex head scales and keeled temporals, and I have considered it to be an insular variety of *T. purpureomaculatus*.

b. Mottled variety.

Brown above blotched with blue, below bluish with brown blotches, scales in 23-25 rows, head scales as in *T. gramineus*. In the Indian Museum there are a good number of snakes of this variety from the Andaman Islands alone.

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c. Brown variety.

This resembles the last, but there is little or no trace of the blue mottling on the ventrals which are almost uniform brown. Two examples from the Andamans in the Indian Museum.

d. Uniform or banded variety.

Colour uniform light reddish or dusky or with regular white transverse bands; scales in 21 rows.

This is the variety described by Stoliczka under the name of *T. mutabilis*, and is found on both the Andamans and Nicobars.

e. Green above, lighter below, resembling the typical variety found in Assam and Burma, scales in 21-25 rows.

This variety occurs on the Andamans, Cocos and Nicobars.

All the above varieties with the exception of the first seem to be referable to *T. gramineus* rather than to *T. purpureomaculatus*.

EXPLANATION OF PLATE VI.

- Fig. 1. *Ablabes stoliczkae*, sp. nov. × 2.
 2. *Simotes woodmasoni*, sp. nov.
 3. *Zoocys tenasserimensis*, sp. nov.
 4. *Tropidonotus pealii*, sp. nov.
 5. *Tropidonotus nicobaricus*, sp. nov. × 2.

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[Received Feb. 26th, 1891. Read March 3rd, 1891.]

Order DIPTERA.

Suborder HOMALOCERATI.

J. Bigot, *adhuc ined.*

Division NEMATOCERATÆ.

J. Bigot, *adhuc ined.* : Nematocera, Meigen, *Syst. Besch.*, i, 1818.

Family CULICIDÆ.

J. Bigot, *adhuc ined.* : Culiciformes, Meigen *Syst. Besch.* i, 1818 : Culicidæ, Latr. *Fam. Natur.* 1825 : Macquart, *S. à Buff. Dipt.* i, 1834 : Culicinæ, Zetterst., *Ins. Laponica* : Culicinæ Rondani, *Prodr.* i, 1856 : Culicina, Schiner, *Faun. Austr. Fliegen* 1864.

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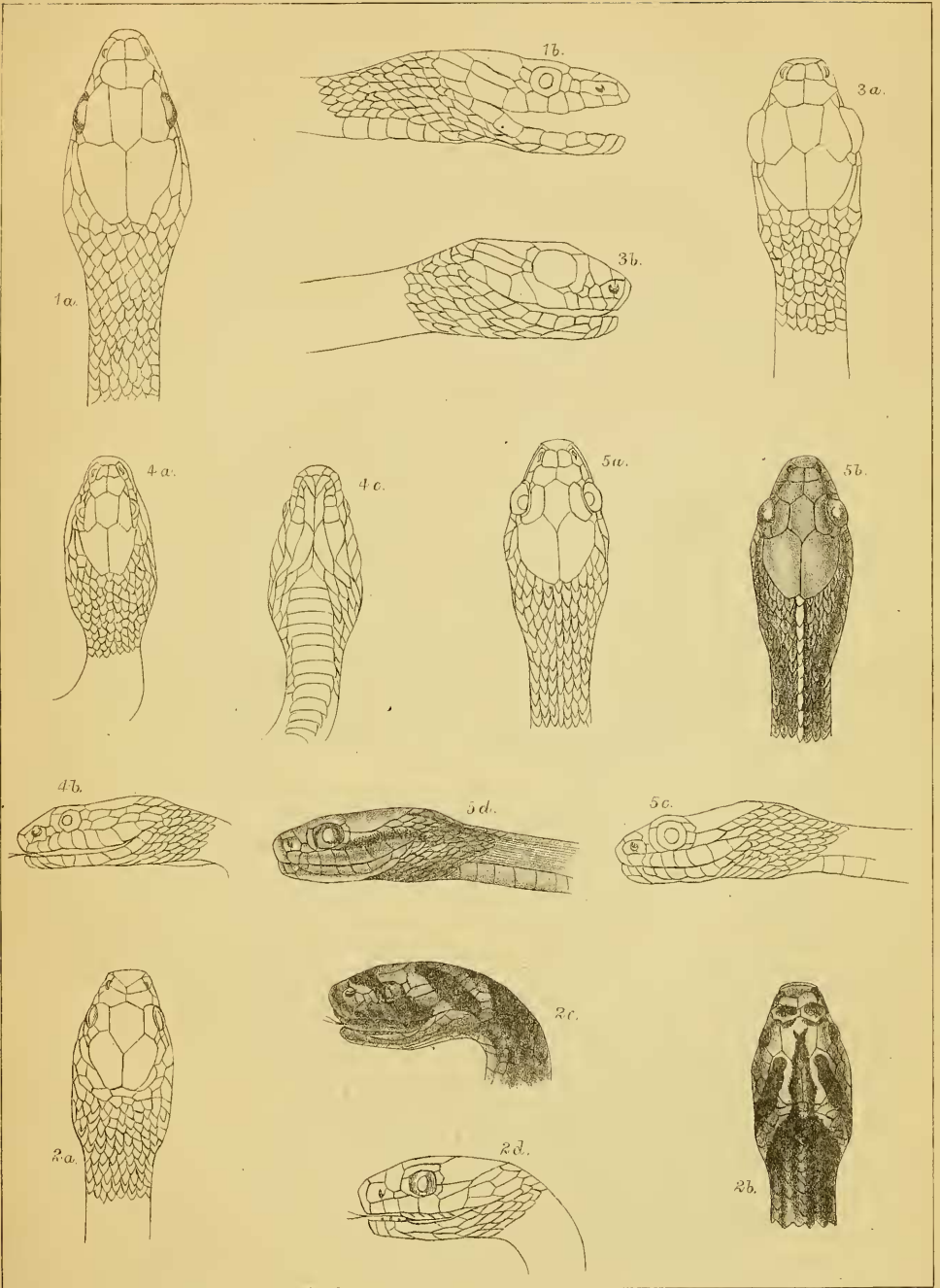
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NEW INDIAN SNAKES.